

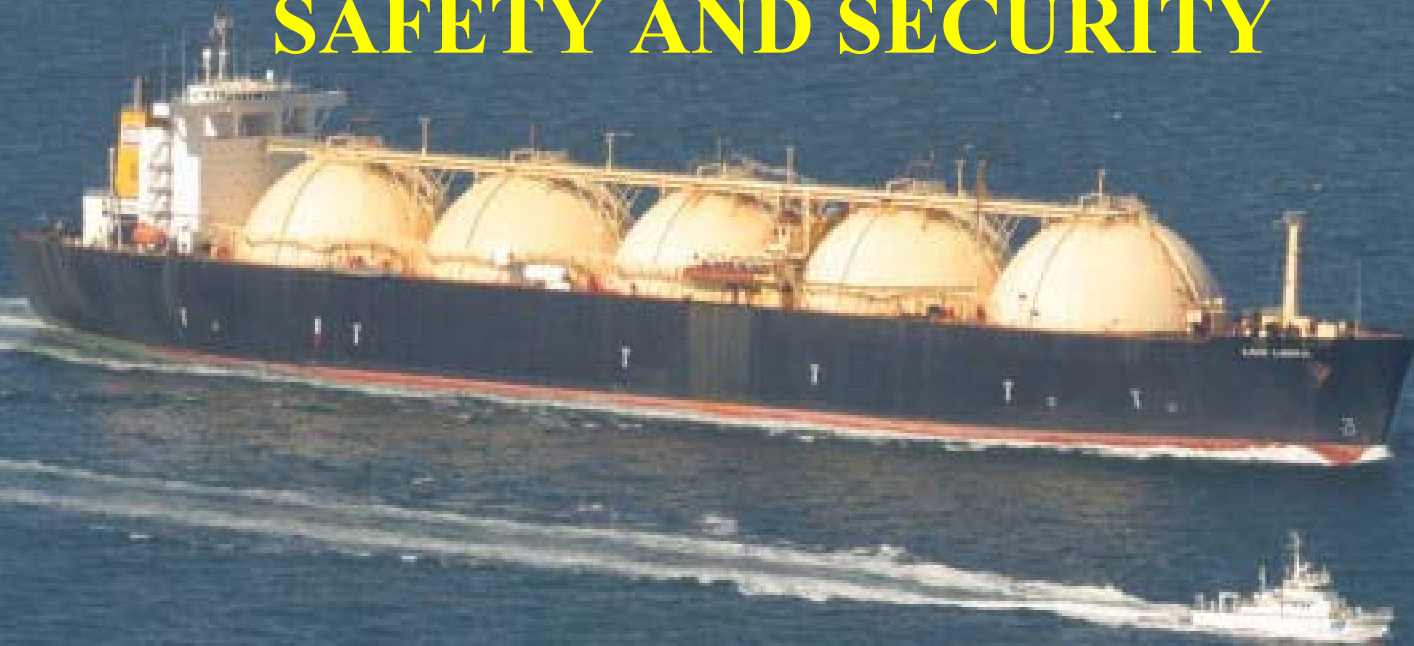


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# **LNG SAFETY AND SECURITY**



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# Coast Guard involvement in LNG safety

## Terminals & Deepwater Ports

Siting process

Security plans

Operations

## Tankers

Vessels Design Standards

Port State Control program

Security Plans

Operations



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## **LNG Onshore Terminals Siting process**

**Letter of Recommendation**

**Federal Energy Regulatory Commission**

**Interagency Agreement with FERC and RSPA**

## **Terminal Security plans**

**33 CFR 105 Facility Security Regulations**

## **Terminal Operations**

**33 CFR 127 Waterfront Facilities Handling  
LNG and Liquefied Hazardous Gas**



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## **Letter of Recommendation Process**

- **Involvement much earlier than the regulations require**
- **Letter of Recommendation considerations can be taken into account as part of the environment assessment being done by FERC**
- **Stakeholder concerns collected through public scoping meetings**
- **Comprehensive Risk Analysis conducted**
- **Stakeholder input utilized in risk analysis**

**In addition to the LOR process, Coast Guard participates in the Environment Impact Statement developed by FERC**



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## **LNG Offshore Terminals Siting process**

**Deepwater Port 33 CFR 148**

**USCG/MARAD/Coastal States**

**NEPA**

## **Terminal Security plans**

**33 CFR 106 Facility Security Regulations**

## **Terminal Operations**

**33 CFR 150 Deepwater Port Operations**



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# **LNG Vessels**

**Design and Standards**

**Port state control program**

**Vessel Security Plans**

**Operational restrictions**



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# SAFETY & SECURITY RULES

## USCG REGULATIONS:

- 46 CFR 154
- 33 CFR 104, 105, and 127, 148

## INTERNATIONAL :

- SOLAS: IMO GAS CARRIER CODE
- SOLAS: ISPS CODE
- CLASSIFICATION STANDARDS  
AND PERIODIC SURVEYS





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# **LNG VESSELS SAFETY FEATURES**

- **DOUBLE HULL CONSTRUCTION**
- **HIGH STRENGTH STEEL IN CRITICAL AREAS**
- **DOUBLE WALLED PIPING SYSTEMS**
- **GAS DETECTION SYSTEMS**
- **INERT INTER-BARRIER SPACES**
- **WATER SPRAY, DRY CHEMICAL, CO2 FIRE FIGHTING SYSTEMS**
- **REDUNDANT STEERING SYSTEMS**
- **HIGHLY TRAINED SPECIALIZED CREWS**





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# **MANAGING THE RISKS**

## **REDUCE UN-CONVENTIONAL THREATS BY:**

### **Enhanced Maritime Domain Awareness**

**-96 HOUR ADVANCE NOTICE OF ARRIVAL**

**-IMPROVED INTEL**

**- AIS**

**-SHIP SECURITY ALERT SYSTEM**

**-ESTABLISH POSITIVE CONTROL OVER VESSEL**

**-ISPS CODE**

**SHIP & FACILITY SECURITY OFFICERS**

**SHIP & FACILITY SECURITY PLANS,**

**FOREIGN PORT SECURITY AUDITS**

**-MARITIME TRANSPORTATION SECURITY ACT:**

**AREA MARITIME SECURITY PLAN**



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# MANAGING THE RISKS

## REDUCE VULNERABILITY BY:

- TRAFFIC CONTROL MEASURES**
- SECURITY ZONES, VESSEL ESCORTS**
- IMPLEMENTING PROCEDURES IN AMS PLAN**
- PRE-ARRIVAL CHECK OF CARGO CONTROL & KEY SAFETY SYSTEMS**
- HIGH DEGREE OF CREW COMPETENCY**



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# MANAGING THE RISKS

## REDUCE CONSEQUENCES BY:

- APPROPRIATE SITING OF TERMINAL & FACILITY
- APPROPRIATE EMERGENCY RESPONSE PLANNING & CAPABILITY
- CARGO HANDLING/CONTROL, SAFETY & FIREFIGHTING EQUIPMENT IN SATISFACTORY CONDITION
- VESSEL DESIGN CHARACTERISTICS:
  - DOUBLE HULL
  - HIGH STRENGTH STEEL IN CRITICAL AREAS



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# MANAGING THE RISKS

**SEVERAL STUDIES CONDUCTED:**

**DEPT OF ENERGY, SANDIA NATIONAL LABS:  
SUSCEPTIBILITY OF VESSEL TO INTENTIONAL  
DAMAGES**

**FEDERAL ENERGY REGULATORY COMMISSION:  
EVALUATING LNG RELEASE MODELS**

***ESTABLISH INTERAGENCY CONSENSUS ON LNG SECURITY***